TS32MQR72V4F

240PIN DDR2 400 Registered DIMM
512MB With 32Mx8 CL3

Description

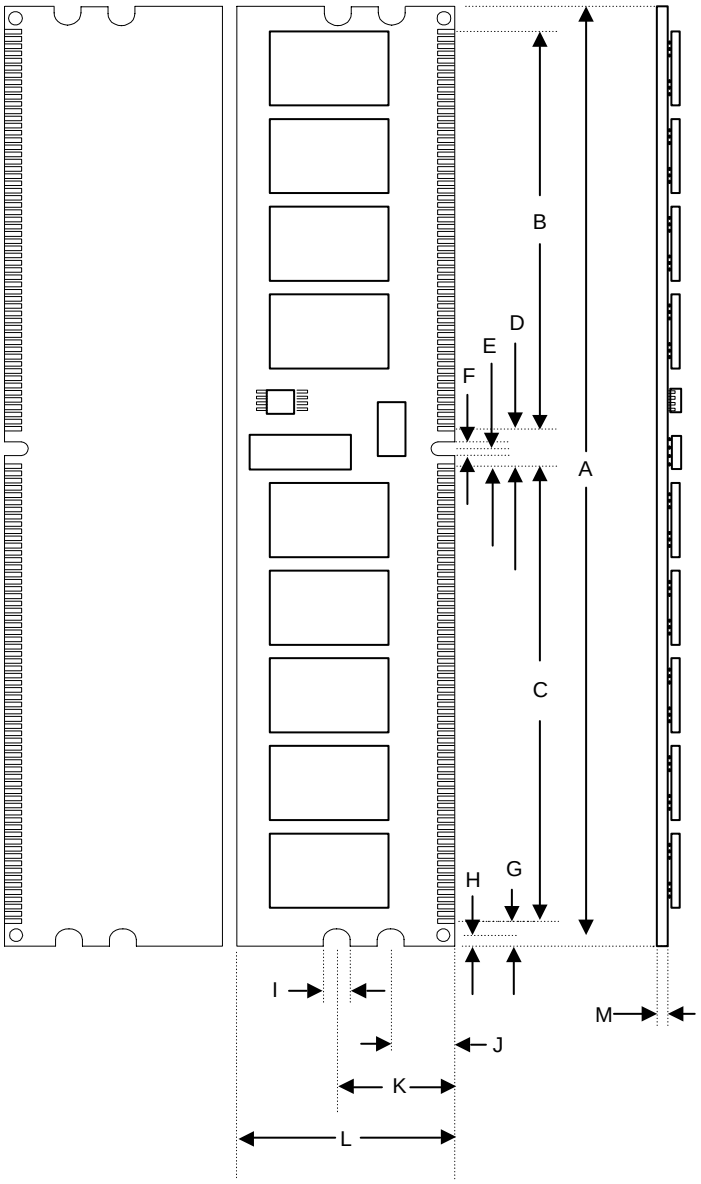
The TS32MQR72V4F is a 32M x 72bits DDR2-400 Registered DIMM. The TS32MQR72V4F consists of 9 pcs 32Mx8 bits DDR2 SDRAMs in 60 ball FBGA package, 1 pcs register in 96 ball uBGA package, 1 pcs PLL driver IC and a 2048 bits serial EEPROM on a 240-pin printed circuit board. The TS32MQR72V4F is a Dual In-Line Memory Module and is intended for mounting into 240-pin edge connector sockets.

Synchronous design allows precise cycle control with the use of system clock. Data I/O transactions are possible on both edges of DQS. Range of operation frequencies, programmable latencies allow the same device to be useful for a variety of high bandwidth, high performance memory system applications.

Features

- RoHS compliant products.
- JEDEC standard 1.8V ± 0.1V Power supply
- VDDQ=1.8V ± 0.1V
- Max clock Freq: 200MHZ; 400Mb/S/Pin.
- Posted CAS
- Programmable CAS Latency: 3,4,5
- Programmable Additive Latency :0, 1,2,3 and 4
- Write Latency (WL) = Read Latency (RL)-1
- Burst Length: 4,8(Interleave/nibble sequential)
- Programmable sequential / Interleave Burst Mode
- Bi-directional Differential Data-Strobe (Single-ended data-strobe is an optional feature)
- Off-Chip Driver (OCD) Impedance Adjustment
- MRS cycle with address key programs.
- On Die Termination
- Serial presence detect with EEPROM

Placement



PCB: 09-2140

Dimensions

Side	Millimeters	Inches
A	133.35±0.15	5.250±0.006
B	55	2.165
C	63	2.480
D	5	0.197
E	2.5	0.098
F	1.5±0.10	0.059±0.039
G	5.175	0.204
H	2.2	0.867
I	4	0.157
J	10	0.394
K	17.8	0.701
L	30±0.15	1.181±0.006
M	1.27±0.10	0.050±0.004

(Refer Placement)

Pin Description

Symbol	Function
A0~A13, BA0, BA1	Address input, bank address
DQ0~DQ63	Data Input / Output.
CB0~CB7	Data Check Bits Input/Output
DQS0~DQS8	Data strobe
/DQS0~/DQS8	Data strobe , negative line
CK0, /CK0	Clock Input.
CKE0, CKE1	Clock Enable Input.
ODT0, ODT1	On-die termination control line
/CS0, /CS1	Chip Select Input.
/RAS	Row Address Strobe
/CAS	Column Address Strobe
/WE	Write Enable
DM0~DM8	Data-in Mask
/DQS9~/DQS17	Data strobes(Read),negative line
VDD	+1.8 Voltage power supply
VDDQ	+1.8 Voltage Power Supply for DQS
VREF	Power Supply for Reference
VDDSPD	Serial EEPROM Positive Power Supply
SA0~SA2	Address select for EEPROM
SCL	Serial PD Clock
SDA	Serial PD Add/Data input/output
VSS	Ground
/RESET	Register and PLL control pin
/Err_Out	Parity error found in the bus
Par_In	Parity bit for address and control bus
NC	No Connection

Pinouts:

Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name
01	VREF	41	VSS	81	DQ33	121	VSS	161	*CB4	201	VSS
02	VSS	42	*CB0	82	VSS	122	DQ4	162	*CB5	202	*DM4,DQS13
03	DQ0	43	*CB1	83	/DQS4	123	DQ5	163	VSS	203	*NC,/DQS13
04	DQ1	44	VSS	84	DQS4	124	VSS	164	*DM8,DQS17	204	VSS
05	VSS	45	*/DQS8	85	VSS	125	*DM0,DQS9	165	*NC,/DQS17	205	DQ38
06	/DQS0	46	*DQS8	86	DQ34	126	*NC,/DQS9	166	VSS	206	DQ39
07	DQS0	47	VSS	87	DQ35	127	VSS	167	CB6	207	VSS
08	VSS	48	*CB2	88	VSS	128	DQ6	168	CB7	208	DQ44
09	DQ2	49	*CB3	89	DQ40	129	DQ7	169	VSS	209	DQ45
10	DQ3	50	VSS	90	DQ41	130	VSS	170	VDDQ	210	VSS
11	VSS	51	VDDQ	91	VSS	131	DQ12	171	CKE1	211	*DM5,DQS14
12	DQ8	52	CKE0	92	/DQS5	132	DQ13	172	VDD	212	*NC,/DQS14
13	DQ9	53	VDD	93	DQS5	133	VSS	173	NC	213	VSS
14	VSS	54	NC	94	VSS	134	*DM1,DQS10	174	NC	214	DQ46
15	/DQS1	55	*NC,Err_Out	95	DQ42	135	*NC,/DQS10	175	VDDQ	215	DQ47
16	DQS1	56	VDDQ	96	DQ43	136	VSS	176	A12	216	VSS
17	VSS	57	A11	97	VSS	137	CK1	177	A9	217	DQ52
18	NC	58	A7	98	DQ48	138	/CK1	178	VDD	218	DQ53
19	NC	59	VDD	99	DQ49	139	VSS	179	A8	219	VSS
20	VSS	60	A5	100	VSS	140	DQ14	180	A6	220	CK2
21	DQ10	61	A4	101	SA2	141	DQ15	181	VDDQ	221	/CK2
22	DQ11	62	VDDQ	102	NC	142	VSS	182	A3	222	VSS
23	VSS	63	A2	103	VSS	143	DQ20	183	A1	223	*DM6,DQS15
24	DQ16	64	VDD	104	/DQS6	144	DQ21	184	VDD	224	*NC,/DQS15
25	DQ17	65	VSS	105	DQS6	145	VSS	185	CK0	225	VSS
26	VSS	66	VSS	106	VSS	146	*DM2,DQS11	186	/CK0	226	DQ54
27	/DQS2	67	VDD	107	DQ50	147	*NC,/DQS11	187	VDD	227	DQ55
28	DQS2	68	NC	108	DQ51	148	VSS	188	A0	228	VSS
29	VSS	69	VDD	109	VSS	149	DQ22	189	VDD	229	DQ60
30	DQ18	70	A10/AP	110	DQ56	150	DQ23	190	BA1	230	DQ61
31	DQ19	71	BA0	111	DQ57	151	VSS	191	VDDQ	231	VSS
32	VSS	72	VDDQ	112	VSS	152	DQ28	192	/RAS	232	*DM7,DQS16
33	DQ24	73	/WE	113	/DQS7	153	DQ29	193	/CS0	233	*NC,/DQS16
34	DQ25	74	/CAS	114	DQS7	154	VSS	194	VDDQ	234	VSS
35	VSS	75	VDDQ	115	VSS	155	*DM3,DQS12	195	ODT0	235	DQ62
36	/DQS3	76	/CS1	116	DQ58	156	*NC,/DQS12	196	A13	236	DQ63
37	DQS3	77	ODT1	117	DQ59	157	VSS	197	VDD	237	VSS
38	VSS	78	VDDQ	118	VSS	158	DQ30	198	VSS	238	VDDSPD
39	DQ26	79	VSS	119	SDA	159	DQ31	199	DQ36	239	SA0
40	DQ27	80	DQ32	120	SCL	160	VSS	200	DQ37	240	SA1